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A Novel Public Health Approach to Measuring Tobacco Cessation Needs Among Cancer Survivors in Alaska

J. Michael Underwood[1], **Samantha J. Hyde-Rolland**[2], **Julia Thorsness**[2,3], and **Sherri L. Stewart**[1]

[1]Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 4770 Buford Highway, N.E., MS-F76, Atlanta, GA 30341, USA

[2]Chronic Disease Prevention and Health Promotion, Alaska Division of Public Health, Department of Health and Social Services, Anchorage, AK 99503, USA

[3]Alaska Comprehensive Cancer Control Program, Division of Public Health, Department of Health and Social Services, Anchorage, AK 99503, USA

Abstract

Cancer survivors who continue to smoke have poorer response to treatment, higher risk for future cancers and lower survival rates than those who quit tobacco after diagnosis. Despite the increased risk for negative health outcomes, tobacco use among Alaskan cancer survivors is 19%, among the highest in the nation. To characterize and address tobacco cessation needs among cancer survivors who called a quit line for help in quitting tobacco, Alaska's Comprehensive Cancer Control program initiated a novel partnership with the state's Tobacco Quit Line. Alaska's Tobacco Quit Line, a state-funded resource that provides confidential coaching, support, and nicotine replacement therapies for Alaskan adults who wish to quit using tobacco, was used to collect demographic characteristics, health behaviors, cessation referral methods and other information on users. From September 2013–December 2014, the Alaska Quit Line included questions about previous cancer status and other chronic conditions to assess this information from cancer survivors who continue to use tobacco. Alaska's Tobacco Quit Line interviewed 3,141 smokers, 129 (4%) of whom were previously diagnosed with cancer. Most cancer survivors who called in to the quit line were female (72%), older than 50 years of age (65%), white (67%), and smoked cigarettes (95%). Cancer survivors reported a higher prevalence of asthma, COPD and heart disease than the non-cancer cohort. Approximately 34% of cancer survivors were referred to the quit line by a health care provider. This report illustrates the need for health care provider awareness of persistent tobacco use among cancer survivors in Alaska. It also provides a sound methodologic design for assessing ongoing tobacco cessation needs among cancer survivors who call a quit line. This survey methodology can be adapted by other public health programs to address needs and increase healthy behaviors among individuals with chronic disease.

Correspondence to: Sherri L. Stewart.

Compliance with Ethical Standards

Conflict of interest All authors have read and approved the manuscript, and there are no financial disclosures, conflicts of interests and/ or acknowledgements necessary. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Keywords

Cancer; Survivorship; Comprehensive Cancer Control; Tobacco

Introduction

Tobacco use among cancer survivors is a known concern. Activities to address this concern will continue to be needed, as the cancer survivor population is projected to exceed 18 million people in the United States by year 2020 [1]. Cancer survivors who continue to smoke have poorer response to treatment, higher risk for future cancers and lower survival rates than those who quit smoking after diagnosis [2–7]. Despite an increased risk for adverse health outcomes, 15% of U.S. cancer survivors continue to smoke after diagnosis [8]. Persistent smoking among cancer survivors may be due to a lack of awareness of their increased health risks, by not only cancer survivors, but also healthcare providers. Prior reports have shown many cancer survivors have never been asked their smoking status by a healthcare provider [9, 10].

The Center for Disease Control and Prevention's National Comprehensive Cancer Control Program (NCCCP) funds states, the District of Columbia (DC), tribes and tribal organizations, selected U.S. territories, and associated Pacific Island jurisdictions to develop and implement local comprehensive cancer control interventions [11]. While NCCCP grantees have long prioritized primary prevention and cancer survivorship, tobacco use among cancer survivors has become a burgeoning public health issue, leading programs to link their work in tobacco cessation and cancer survivorship. The Comprehensive Cancer Control (CCC) Program at the Alaska Department of Health and Social Services, Division of Public Health, is dedicated to addressing persistent smoking among their cancer survivor population.

Alaska is home to more than 30,000 cancer survivors [8] and the state smoking rate among cancer survivors is among the highest in the country [12]. Approximately 19% of Alaskan cancer survivors currently smoke [13]. To begin addressing this unhealthy behavior among survivors, and determine supportive resources and interventions, in 2013, Alaska's CCC program initiated a novel partnership with Alaska's Tobacco Quit Line program. Through this partnership, questions about previous cancer diagnoses were added to the tobacco cessation telephone survey administered to quit line callers. The survey collects information on the caller demographics, lifestyle behaviors and health status. The caller also provides healthcare information which details his or her medical care provider's awareness of the patient's tobacco use and involvement in their tobacco cessation activities and quit attempts. In this study, we report demographic characteristics, lifestyle behaviors and tobacco cessation referral methods among cancer survivors in Alaska who called the tobacco quit line using this novel methodology. Our findings can be used to identify opportunities to provide support to and improve the health and quality of life of cancer survivors.

Methodology

Data Source-Alaska's Tobacco Quit Line

The quit line is a state-funded resource that provides confidential coaching, support, and nicotine replacement therapies for Alaskan adults who wish to quit using tobacco [14]. Alaska's tobacco quit line uses the North American Quit line Consortium (NAQC) (http://www.naquitline.org/) minimal data elements in their standardized surveillance of quit line access, use and evaluation. The quit line is administered by Alaska's Tobacco Prevention and Control Program (TPCP), with technical assistance provided by subcontractor Alere Wellbeing™. Coaching can be telephonic, web-based, or text-based. All quit line callers provide demographic information upon registration, which can be used to analyze characteristics of the population of tobacco users who choose to use this service. TPCP collects de-identified quit line files containing coded responses to Alaska's Tobacco Quit Line registration questions on a monthly basis. Only calls that were from self-identified tobacco users registering for the quit line to request an intervention were used in this analysis. Because it is possible for a caller to register for multiple programs, the "Person ID," a unique identifier, was used to eliminate duplicate data. If there were multiple registration calls with the same "Person ID," the most recent call was used. It is worth noting that the same questions are asked at each registration, so the most recent call captures all demographic data asked in previous registrations.

Tobacco users were self-identified by the following question: "Are you calling for yourself or for someone else?" Subsequent questions provide data on sex, age, race, public health region (see "Data variables" for Alaska public health region definitions), method by which caller was referred to the quit line, education, type or types of tobacco product used, and the presence of other comorbid (chronic) conditions. To assess the proportion of quit line callers who also suffered from chronic diseases (comorbidities), callers were asked "Have you been diagnosed with any of the following Chronic Conditions: asthma, cancer, chronic obstructive pulmonary disease, coronary artery/ heart disease, type 1 diabetes or type 2 diabetes?" Callers were allowed to select multiple chronic conditions; any caller that reported any prior cancer diagnosis was designated as a "cancer survivor" for this study. All data used for analysis came from the NAQC minimal dataset, which is available for public use. As is the case with most standardized, national surveillance systems, there is a delay between when the data are collected and when they become available for analysis. For instance, the Behavioral Risk Factor Surveillance System data are generally two years behind the current year; however, they constitute the most recently available data [8]. Since the NAQC minimal dataset is public use, and no identifiable information were collected or analyzed, this analysis did not require Internal Review Board review.

Data Variables

We aggregated the responses into the following categories: white, Alaska Native/American Indian and Other. Alaska Native/American Indians are the largest minority group in the state of Alaska. The "other" category included Black/African Americans, Asians, Native Hawaiians/Other Pacific Islanders and those callers who did not identify with any of the choices given. Aggregation into an "other" category was necessary because the non-Native

Alaskan minority population in Alaska was too small to present reliable data on individual subgroups.

Since Alaska has no county health departments, the state is responsible for administering public health functions to communities across several diverse regions. Alaska's TPCP divide the state into six geographical public health regions: Anchorage/Mat-Su, Gulf Coast, Northern, Interior, Southeast and Southwest. A separate "unknown" category was added for those callers who did not provide the necessary data to place them geographically.

We report the top five methods by which callers were referred to the quit line, which include: health care professionals, family or friend, television advertisements, paper brochures or online newsletters and "other." "Other" includes a variety of methods not specified above, such as radio advertisements and bus posters. Quit line callers are asked about specific type of tobacco use. Since cigarettes are the most common type of tobacco use reported among Alaska Tobacco Quit Line callers, the data were aggregated into two categories: cigarettes and "other," which includes pipes, cigars and smokeless tobacco. Callers were able to report using multiple types of tobacco, and some callers identified as "cigarette smokers" may also use other forms of tobacco. Nicotine replacement therapy (NRT) is provided free of charge to all adult callers to the quit line, and distributed throughout 2- or 4-week programs. Any caller who enrolled in an NRT program during the Alaska Quit Line phone interview was included in this report.

Data Analysis

We utilized SPSS (version 22) software for all data analyses. We compared demographic characteristics among Alaska Quit Line callers from September 2013 and December 2014. Quit Line callers were stratified in two groups: (1) respondents who reported previously being diagnosed with cancer, therefore meeting the criteria for a 'cancer survivor' provided by the Centers for Disease Control and Prevention, [8] and (2) respondents who did not report a prior cancer diagnosis, therefore identified as the non-cancer cohort. The two groups were then analyzed separately. The FREQUENCY command was used to obtain counts of single variables within the filtered data; for example, the number of respondents who responded that they had been diagnosed with a specific chronic health condition. For analyses of numerical variables, such as age, the EXAMINE command was used to analyze age by our age groups (18 to 39, 40 to 49, 50–65 and 65+). EXAMINE creates tables of descriptive statistics, including percentages and other metrics. Because this was not a random sample, only point estimates (that is, no measures of sampling uncertainty) are provided in the tables and figures (Figs. 1, 2).

Results

Alaska's Tobacco Quit Line interviewed 3141 tobacco users, 129 of whom were previously diagnosed with cancer (Table 1). Females accounted for 72% of cancer survivors and 55% of the non-cancer cohort. Approximately 65% of cancer survivors were at least 50 years of age, compared to 34% of the non-cancer cohort. Among cancer survivors, most quit line callers were white (67%), followed by Alaska Native/American Indian (21%), and other (12%). Among the non-cancer cohort, most quit line callers were white (64%), followed by Alaska

Native/American Indian (23%), and other (13%). The proportion of cancer survivors (47%) and of the non-cancer cohort (48%) who live in Anchorage was nearly identical. The proportion of quit line callers who had not finished high school was higher among cancer survivors (14%) than among the non-cancer cohort (12%). When reporting type of tobacco use, more cancer survivors report smoking cigarettes (95%) than the non-cancer cohort (89%).

Among quit line callers, a higher proportion of cancer survivors reported other chronic conditions than the noncancer cohort. Among cancer survivors, COPD was the most commonly reported comorbidity (26%), followed by asthma (21%), heart disease (11%) and diabetes (6%). Among the non-cancer cohort, diabetes was the most commonly reported comorbidity (17%), followed by asthma (16%), COPD (11%) and heart disease (6%).

The largest proportion of cancer survivors were referred to the Alaska Quit Line by a health care professional/physician (34%), followed by other (26%), TV advertisement (17%), family/friend (12%) and brochure (11%). The largest proportion of the non-cancer cohort was referred to the Alaska Quit Line by other (34%), followed by a health care professional/physician (23%), family/friend (16%), TV advertisement (16%), and brochure (10%).

Discussion

Tobacco use among cancer survivors in Alaska is a persistent public health issue. Our findings from quit line callers demonstrate that cancer survivors who registered with the state quit line to request an intervention experienced a higher percentage of concomitant chronic diseases, including lung and heart disease, than tobacco users registering with the state quit line who are not cancer survivors. In addition, a larger proportion of cancer survivors than of non-cancer survivors who use the state quit line are referred by health care professionals/physicians. Finally, we've established an important and innovative partnership that builds on current surveillance systems and methodologies to assess the tobacco cessation-related needs of cancer survivors. This cancer and tobacco control partnership can serve as a model for other public health programs seeking to implement data-driven interventions in a resource-effective manner.

In addition to providing the first descriptive assessment of quit line use among cancer survivors in Alaska, our survey findings also indicate some areas for improvement. The quit line callers in this study report a high prevalence of comorbidities, which is consistent with prior national reports of cancer survivors' health and behaviors [8]. Full implementation of survivor care plans may assist cancer survivors in managing not only their cancer diagnosis, but also other chronic conditions [15]. Survivor care plans provide detailed information for future follow-up cancer screenings, vaccinations and other health-related information, and can also be used to ensure that appropriate referrals to evidence-based tobacco cessation programs are offered when appropriate. Also, while we found that cancer survivors were more likely to have been referred to quit lines by providers compared to those without a cancer history, quit line referral from providers was low overall among both populations. Nearly two-thirds of all cancer survivors in this study were referred to the quit line by someone other than a health care provider. This may represent missed opportunities by

providers to help survivors engage in healthy behaviors that can improve their quality of life. Studies have shown that many cancer survivors who currently smoke have not been counseled by their health care provider to quit [16]. It is important that health care providers assess tobacco use among all patients, particularly those with a history of cancer, and refer current smokers to tobacco cessation services to prevent future disease. Continued smoking after a cancer diagnosis is a substantial health hazard. Cancer survivors who continue to smoke are less likely to respond to treatment, experience exacerbated toxicity due to chemotherapy, and have lower survival rates than patients who stopped smoking before or at the time of diagnosis [2, 3, 6, 7].

The use of existing surveys to assess cancer survivor needs within populations has been done previously at a national level with the Behavioral Risk Factor Surveillance System [8] and the National Health Interview Survey [17]. However, our study represents, to our knowledge, the first addition of questions about cancer survivorship to a state tobacco quit line survey. Although there is some evidence that cancer and tobacco programs are building partnerships and collaboration within their work environments, substantial barriers, including lack of resources, exist [18]. The enhancement of existing surveys across chronic disease programs, especially with regard to risk factors that are common to multiple chronic diseases (such as tobacco use), can be an effective method to address and control chronic diseases.

The findings in this report are subject to several strengths and limitations. A strength of this study is the use of Alaska's Tobacco Quit Line, which provides quality data from a state with a relatively high smoking prevalence. Another strength is the diverse sample of Alaskan smokers, since callers were referred to the quit line by health care providers, friends, family, brochures, TV advertisements and other methods. Also, the demographic distribution of survey respondents is similar to that of the overall population in Alaska [19]. Among limitations, quit line data are self-reported and subject to recall bias. Second, the small sample size of cancer survivors may not be representative of the total population of cancer survivors who use tobacco across the state. Because some Alaska regions traditionally account for proportionally fewer callers to the quit line, some regional variations in tobacco use may be missed. Iqmik, also known as 'Blackbull', is an Alaska-specific smokeless tobacco product prepared by mixing chewing tobacco with the ash of a punk fungus. Due to the limited sample size, we are unable to report on the use of particular tobacco products, such as the prevalence of Iqmik (smokeless tobacco primarily used in Southwest Alaska). In 2013, 13% of Alaskan adults who use smokeless tobacco reported using Iqmik. Iqmik is used primarily by Alaska Native groups in the Southwest and the interior region of Alaska. Statewide, 34% of Alaska Native smokeless tobacco users report using only Iqmik (compared to 1% of non-Native smokeless tobacco users) [20]. These limitations highlight the need for continued quit line outreach and research in Alaska.

In conclusion, this report illustrates the need to continue to provide tobacco cessation services for cancer survivors in Alaska who use tobacco products. Health care providers and public health practitioners can collaborate to attempt to boost referrals to tobacco cessation services in this population. Additionally, other NCCCP grantees can engage partners in a similar way to help reduce risk factors leading to cancer, as well as cancer and/or chronic disease burden in their respective communities.

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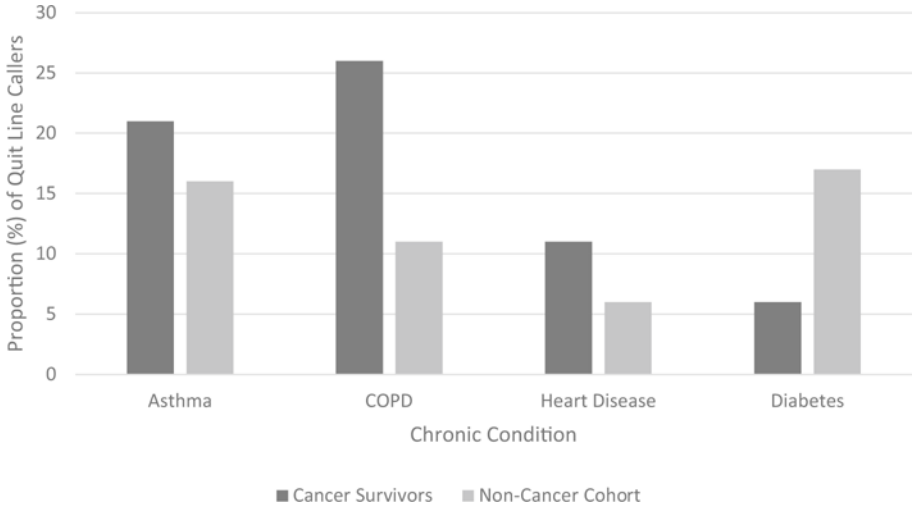

Fig. 1.

Chronic conditions among Alaska Quit Line callers, 2013–2014. Alaska's tobacco quit line completed interviews from 3,141 callers from September 2013 to October 2014. Cancer survivors were defined as all callers who reported previously being diagnosed with cancer; non-cancer cohort were callers who did not report a previous cancer diagnosis. Quit line callers were asked if they suffered from chronic conditions, then asked to select from asthma, COPD, heart disease and diabetes

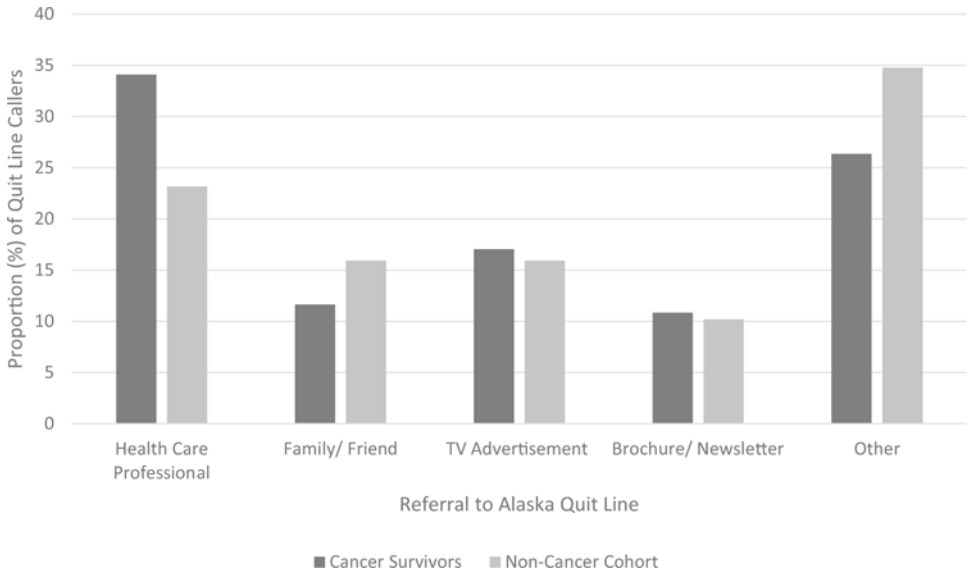

Fig. 2.

Referral method among Alaska Quit Line callers, 2013–2014. Alaska's tobacco quit line completed interviews from 3141 callers from September 2013 to October 2014. Cancer survivors were defined as all callers who reported previously being diagnosed with cancer; non-cancer cohort were callers who did not report a previous cancer diagnosis. Quit line callers were asked how they were referred to/ heard about the quit line services

Table 1

Demographic characteristics among Alaska Quit Line callers, 2013–2014[1,2,3]

Tobacco quitline callers—Alaska, 2013–2014				
	Cancer survivors		Non-cancer cohort	
	%	Sample size	%	Sample size
Sex				
Male	28	36	45	1349
Female	72	93	55	1663
Age				
18–39	16	20	47	1415
40–49	20	26	19	570
50–65	49	63	31	922
65+	16	20	3	105
Race				
White	67	87	64	1930
Alaska Native	16	21	21	622
American Indian	5	6	2	64
Other	12	15	13	397
Alaska geographic region				
Anchorage/Mat-Su	47	60	48	1435
Gulf Coast	14	18	12	375
Interior	17	22	19	565
Northern	*	*	2	59
Southeast	16	21	13	386
Southwest	*	*	3	92
Education				
Less than high school	14	18	12	349
HS or GED	30	39	38	1133
Some college or technical school (1–3 years)	39	50	34	1036
College graduate (4 years +)	12	16	13	380
Unknown	5	6	4	115
Tobacco use (e.g. chew tobacco, snuff, snus)				
Cigarette	95	123	88	2665
Other	*	*	11	328
NRT distributed				
Yes	81	105	82	2457

NRT nicotine replacement therapy

[1] Alaska's tobacco quit line completed interviews from 3,141 callers from September 2013 to October 2014

[2] Cancer survivors were defined as all callers who reported previously being diagnosed with cancer; non-cancer cohort were callers who did not report a previous cancer diagnosis

[3] Sample size includes all Alaska Quit Line callers

* Data suppressed because the sample size of the numerator was <6